

Freeform Optics enabling CubeSat Missions

Completed Technology Project (2014 - 2016)



Project Introduction

Freeform Optics have the potential to reduce package size and improve image quality of optical instruments. This project investigates their use in CubeSat platforms.

Freeform Optics give more design degrees of freedom that enable smaller package sizes and improved image quality for optical instruments. This project includes a design study using freeform optics, and evaluation of a prototype freeform optic in enabling instruments for CubeSat platforms.

Anticipated Benefits

CubeSat missions.

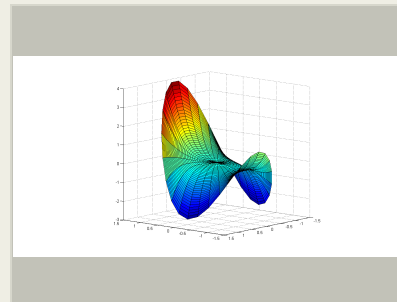
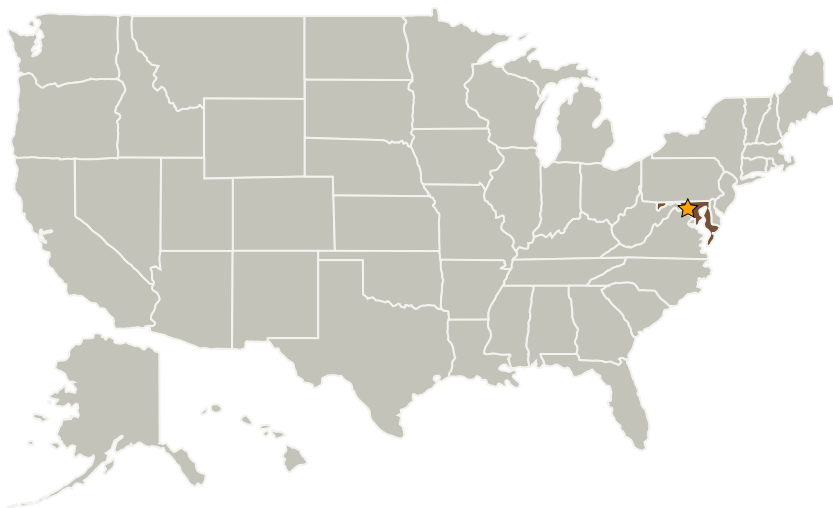
Small Satellite missions.

Freeform optics can also benefit larger missions by improving image quality of telescopes. Examples include WFIRST and ATLAST.

Freeform Optics benefits any commercial space industry customer interested in better image quality or reduced package size of optical instruments.

Freeform Optics can potentially benefit other agencies interested in remote sensing applications, such as NOAA and DOD.

Primary U.S. Work Locations and Key Partners



Example Freeform Optic

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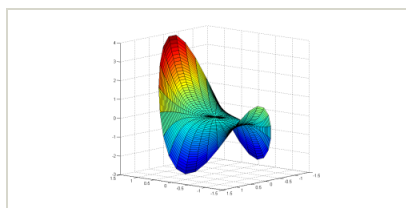


Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations

Maryland

Images



Freeform Optic

Example Freeform Optic
(<https://techport.nasa.gov/image/4212>)

Links

NTR 1438094372
(no url provided)

Project Website:

<http://aetd.gsfc.nasa.gov/>

Organizational Responsibility

Responsible Mission Directorate:

Mission Support Directorate (MSD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Independent Research & Development: GSFC IRAD

Project Management

Program Manager:

Peter M Hughes

Project Manager:

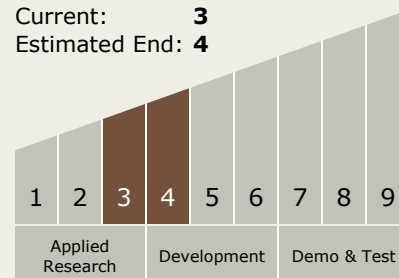
Terence A Doiron

Principal Investigator:

Joseph M Howard

Technology Maturity (TRL)

Start: 3
Current: 3
Estimated End: 4



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Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.3 Optical Components